



Curriculum Vitae

Date Prepared: 10/01/2022
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Place of Birth: Singapore, Singapore

Education:

2010	B.Sc (Hons)	Biomedical Sciences	National University of Singapore
2015	Ph.D	Epidemiology Advisor: Prof Lee Yung Seng	National University of Singapore

Postdoctoral Training:

02/2015 – 08/2017	Research Fellow	Epidemiology – Developmental Origins of disease	Singapore Institute for Clinical Sciences
09/2017 – 08/2019	Postdoctoral Research Fellow	Epidemiology – Developmental Origins of disease	Harvard Medical School and Harvard Pilgrim Health Care Institute
09/2019 – 02/2020	Senior Fellow	Epidemiology – Developmental Origins of disease	Harvard Medical School and Harvard Pilgrim Health Care Institute

Faculty Academic Appointments:

03/2020 – 09/2020	Member of the Faculty	Population Medicine	Harvard Medical School
10/2020 –	Assistant Professor	Population Medicine	Harvard Medical School

Appointments at Hospitals/Affiliated Institutions:

03/2020 –	Institute Faculty	Population Medicine	Harvard Pilgrim Health Care Institute
10/2020 –	Assistant Professor	Population Medicine	Harvard Pilgrim Health Care Institute

Major Administrative Leadership Positions:

Local

2021 –	Co-director, Clinical Epidemiology and Population Health: Essentials of the Profession I	Harvard Medical School
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Committee Service:

Local

2020 –	Co-chair, Collaboration and Culture Working Group, Division of Chronic Disease Research Across the Lifecourse Strategic Planning	Harvard Pilgrim Health Care Institute
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2020 –	Member, Education and Training Working Group Committee	Harvard Pilgrim Health Care Institute
2021 –	Member, Diversity, Equity, and Inclusion – Community Outreach & Mentoring Subcommittee	Harvard Pilgrim Health Care Institute
2022 –	Member, PhD committee for Ekaterina Sadikova	Harvard TH Chan School of Public Health

National

2022 –	Member, Environmental influences on Child Health Outcomes (ECHO) Publications Committee	National Institutes of Health
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Professional Societies:

2018 –	Society of Pediatric and Perinatal Epidemiology Research	Member
2018 –	US Society for Developmental Origins of Health and Disease	Member
2020 –	Society for Epidemiology Research	Member
2020 –	International Epidemiological Association	Member
2020 –	Obesity Society	Member
2020 –	American Society of Nutrition	Member

Grant Review Activities:

2022	KU Leuven (University of Leuven, Belgium)	Grant reviewer
2022	Medical Research Council, United Kingdom Research and Innovation	Grant reviewer

Editorial Activities:

Ad hoc Reviewer

Circulation; JAMA Pediatrics; JAMA Network Open; PLOS Medicine; Lancet Child and Adolescent Health; Lancet Regional Health – Americas; International Journal of Epidemiology; Metabolism; Obesity Reviews; Diabetes, Obesity and Metabolism; American Journal of Clinical Nutrition; Journal of Clinical Endocrinology and Metabolism; Pediatrics; Human Reproduction; Epidemiology; International Journal of Obesity; Journal of Nutrition; Clinical Nutrition; European Journal of Nutrition; Clinical Epidemiology; American Journal of Epidemiology; Scientific Reports; Journal of the American Heart Association; Obesity; Frontiers in Endocrinology; Pediatric Obesity; Journal of Pediatrics; Pediatric Diabetes; British Journal of Nutrition; Obesity Facts; Obesity Research and Clinical Practice; BMJ Open; Pediatric and Perinatal Epidemiology; Childhood Obesity

Honors and Prizes:

2010	Dean's List	National University of Singapore	For achieving exam results in top 1% of the cohort
2011	Research Scholarship	National University of Singapore	Full funding for PhD studies
2016	Young Investigator Award	Nestle Nutrition Institute	Best research paper for Nestle Nutrition Institute Young Investigator Award competition
2017	Rising Star Award	Australian and New Zealand Obesity Society	Recognition of achievements and potential to become a research leader in the field of obesity
2017	Overseas Postdoctoral Fellowship	National University of Singapore	Full funding for postdoctoral training
2019	NIH Travel Award	National Institutes of Diabetes and Digestive and Kidney Disease	Full funding for conference presentation

2021	Outstanding Manuscript Award	Nutrition Obesity Research Center at Harvard	One of three recipients for Outstanding Research Paper
2021	Scientific Award	US Developmental Origins of Health and Disease Society	Full funding for conference presentation Recognition of achievements and potential to become a research leader in the field of reproductive, perinatal, and pediatric epidemiology
2022	Rising Star Award	Society of Pediatric and Perinatal Epidemiology Research	Recognition of faculty who are still in the early stages of their career, but are devoting their time to providing mentoring for others
2022	Young Mentor Award	Harvard Medical School	

Report of Funded and Unfunded Projects

Past

- 2020 – 2021 **Title:** Dynamic Change Processes in Growth Trajectories from Infancy to Early Adolescence
Funding agency: NIH/ECHO A03-3828
Role: Subaward Principal investigator (PI: Chang Liu)
Description: The overarching goal is to characterize and identify predictors of long-term dynamic change processes for key child phenotypes within two ECHO outcome domains: body mass index (Obesity), and aggressive behavior (Neurodevelopment) using two innovative and complimentary longitudinal data analysis approaches, the multiphase latent growth mixture model, and the multilevel location-scale model.
- 2019 – 2022 **Title:** Pre- and Peri-natal Predictors of Childhood Obesity
Funding agency: NIH/NICHD R01 HD034568
Role: Co-investigator (PI: Emily Oken)
Description: This project is aimed at characterizing health trajectories from (before) birth through adolescent transitions using novel 'omics and biostatistical approaches to quantifying causal and modifiable determinants in participants aged 15-18 in Project Viva.

Current

- 2019 – 2023 **Title:** Long-term health consequences of birth by cesarean section
Funding agency: NIH/NICHD 1R01HD093761
Role: Co-investigator (PI: Jorge E. Chavarro)
Description: The overarching goal of the grant is to leverage already collected, de-identified data from Project Viva and the Vitamin D Antenatal Asthma Reduction Trial (VDAART), both prospective longitudinal cohorts of mothers and children, to examine the associations of birth by cesarean delivery with long-term chronic disease risk, including obesity, Type 2 diabetes, cardiovascular disease, and common cancers.
- 2021 – 2022 **Title:** Neighborhood Opportunities and Disparities in Child Health Outcomes.
Funding agency: Department of Population Medicine; Harvard Pilgrim Health Care Institute and Harvard Medical School.
Role: Principal Investigator; Direct costs – \$32,000
Description: The overall goals of this proposal are to characterize publicly available metrics that represent aspects of neighborhood disadvantage (Area Deprivation Index, Social Vulnerability Index) and opportunity (Child Opportunity Index) among children within the Project Viva cohort, and examine the extent to which these metrics are related to disparities in child outcomes including obesity, asthma and cardiometabolic health.
- 2021 – 2023 **Title:** Neighborhood Opportunities and Disparities in Child Health Outcomes: A Nationwide US Multi-cohort Study
Funding agency: NIH/ECHO U2C OD023375-06
Role: Principal Investigator; Direct costs – \$142,751
Description: The overall goals of this proposal are to characterize publicly available metrics that represent aspects of neighborhood disadvantage (Area Deprivation Index, Social Vulnerability Index) and opportunity (Child Opportunity Index) among children within the

Environmental influences on Child Health Outcomes (ECHO) program and examine the extent to which these metrics are related to disparities in child outcomes such as obesity and asthma.

2022 – 2027 **Title:** Prenatal environmental determinants of health in young adulthood: a lifecourse approach
Funding agency: NIH/NICHD 2R01 HD034568-20
Role: Co-Investigator (MPIs: Emily Oken, Marie-France Hivert)
Description: The overall goals of this proposal are to examine the extent to which prospectively-collected measures of prenatal maternal behaviors and biology (e.g. diet, smoking, inflammation, blood pressure, glycemia, weight gain, depressive/anxiety symptoms), as well as elements of the chemical and social environments (e.g. metals, PFAS, air pollution, material hardship, neighborhood deprivation) are related to cardiometabolic, reproductive, and experiential health outcomes in young adulthood.

Projects submitted for funding

In review **Title:** Neighborhood environments and ideal cardiovascular health (ICVH) from infancy through adolescence in three U.S. pediatric cohorts
Funding agency: NIH/NHLBI
Role: Principal Investigator; Direct costs requested – \$199,964
Description: This proposal leverages extant data from over 3000 youth in three longitudinal cohort studies in Boston, MA (Project Viva) and Denver, CO (Healthy Start, Exploring Perinatal Outcomes among Children [EPOCH]) to characterize prospective change in ideal cardiovascular health (ICVH) and its components from infancy through adolescence, and evaluate the extent to which neighborhood environments affect the maintenance of ICVH.

In review **Title:** Stress-Air Pollution Interactions and Adolescent Neurobehavior
Funding Agency: NIH/NIEHS
Role: Co-Investigator (PI: Robert O. Wright)
Description: The overall goal of this proposal is to assess the role of perinatal environment, negative affect, and inhibitory control on obesity phenotypes in children aged 13-16 years, by capitalizing on data from PROGRESS, a prospective child health cohort that has collected longitudinal exposure, covariate, and phenotype data from pregnancy.

In review **Title:** Early life environmental risk factors and -omics biomarkers for kidney function trajectories across adolescence
Funding Agency: NIH/NIEHS
Role: Principal Investigator; Direct costs requested – \$2,475,997
Description: This innovative proposal capitalizes on extant data from an ongoing pre-birth cohort in eastern Massachusetts (Project Viva) to characterize the natural history of kidney function and blood pressure across development in children, assess the relationship of pre- and postnatal exposure to candidate nephrotoxics with later kidney dysfunction and BP, and identify novel urinary protein and metabolite biomarkers underlying altered kidney function from childhood to adolescence.

Report of Local Teaching and Training

Teaching of Students in Courses:

2019 – present	<u>Course:</u> Essentials of the Profession I – Clinical Epidemiology and Population Health <u>Student audience:</u> 1 st -year medical and dental students	Harvard Medical School <u>Role:</u> Faculty instructor
2019 – present	<u>Course:</u> Obesity Epidemiology <u>Student audience:</u> Masters of Public Health and Doctor of Science students	Harvard TH Chan School of Public Health <u>Role:</u> Lecturer
2020 – present	<u>Course:</u> Essentials of the Profession II – Clinical Epidemiology and Population Health <u>Student audience:</u> 3 rd -, 4 th -, and 5 th -year medical students	Harvard Medical School <u>Role:</u> Faculty instructor

Other Mentored Trainees and Faculty:

2018 – 2020 Name: Jiajin Hu
Current position: Research Fellow (China Medical University)

- Description: Acted in the capacity of a co-mentor on student's PhD project, that resulted in three peer-reviewed publications.
- 2021– 2022 Name: Kristen Shanahan
Current position: Assistant Professor (Massachusetts General Hospital)
Description: Acted in the capacity of a primary mentor for her research work using data from the Project Viva cohort.
- 2019 – present Name: Alison J. Wu
Current position: Attending Physician (Boston Children's Hospital)
Description: Acted in the capacity of a secondary mentor and advisor on methods for longitudinal data analysis.
- 2019 – present Name: Carmen Monthe-Dreze
Current position: Instructor of Medicine (Brigham and Women's Hospital)
Description: Acted in the capacity of a secondary mentor and advisor on methods for longitudinal data analysis.
- 2020 – present Name: Caitriona McGovern
Current position: Clinical Research Fellow (Boston Children's Hospital)
Description: Acted in the capacity of a primary mentor for her fellowship training in the Department of Population Medicine.
- 2022– present Name: Ong Yi Ying
Current position: Postdoctoral Fellow (Harvard School of Public Health and National University of Singapore)
Description: Acted in the capacity of a co-supervisor for her postdoctoral research project.

Formal Teaching of Peers (e.g., CME and other continuing education courses):

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| 2018 | <u>Title:</u> Trajectory modelling approaches
<u>Course:</u> CoRAL Methods Working Group | 3 hours
Boston, MA, USA |
| 2019 | <u>Title:</u> Causal inference approaches
<u>Course:</u> CoRAL Methods Working Group | 1 hour
Boston, MA, USA |

Report of Regional, National and International Invited Teaching and Presentations

No presentations below were sponsored by 3rd parties/outside entities

National

- 06/2021 **Title:** Neighborhood Child Opportunity Index and Adolescent Cardiometabolic Risk
Type of presentation: Invited seminar (via Zoom)
Location: NIH ECHO Obesity Working Group Meeting
- 10/2021 **Title:** Association of early life growth with offspring pubertal development: A nationwide US multi-cohort study
Type of presentation: Invited seminar (via Zoom)
Location: NIH ECHO Virtual Fall Meeting.
- 11/2021 **Title:** New Developments in the Developmental Origins of Obesity and Obesity-related Conditions.
Type of presentation: Invited seminar (via Zoom)
Location: Lifecourse Epidemiology of Adiposity & Diabetes (LEAD) Center, Colorado School of Public Health.
- 12/2021 **Title:** Neighborhood Opportunities and Disparities in Child Health Outcomes: A Nationwide US Multi-Cohort Study.
Type of presentation: Invited seminar (via Zoom)
Location: NIH ECHO Stakeholder Working Group Meeting.
- 04/2022 **Title:** Neighborhood Opportunities and Disparities in Child Health Outcomes: A Nationwide US Multi-Cohort Study.
Type of presentation: Invited flash talk (via Zoom)
Location: NIH ECHO-wide cohort Spring Virtual meeting.

09/2022 **Title:** Neighborhood Opportunity and Vulnerability, and Trajectories of Child Body Mass Index and Obesity in the ECHO Cohorts.
Type of presentation: Invited flash talk (via Zoom)
Location: NIH ECHO Obesity Working Group Meeting.

International

09/2022 **Title:** New Developments in the Developmental Origins of Obesity.
Type of presentation: Invited keynote seminar (via Zoom)
Location: 2nd International Conference on the Comprehensive Life Course Prevention and Treatment of Obesity and Related Chronic Diseases, China

Report of Clinical Activities and Innovations

Clinical Innovations

2017 birth weight for gestational age reference With my mentor Emily Oken, we generated an updated fetal growth reference based on 2017 births, published in 2019 (Original Research Publication #70). The reference includes an online calculator (available at: https://izzuddin-aris.shinyapps.io/BW-for-GA_z-score_webapp/) to generate birth weight for gestational age percentiles and z scores for individual births or datasets.

Report of Scholarship

Peer Reviewed Research Investigations

1. **Aris IM**, Soh SE, Tint MT, Liang S, Chinnadurai A, Saw SM, Kwek K, Godfrey KM, Gluckman PD, Chong YS, Yap FK, Lee YS. *Body fat in Singaporean infants: development of body fat prediction equations in Asian newborns*. Eur J Clin Nutr. 2013 Sep;67(9):922-7.
2. **Aris IM**, Gandhi M, Cheung YB, Soh SE, Tint MT, Gluckman PD, Lee YS, Yap FK, Chong YS. *A new population-based reference for gestational age-specific size-at- birth of Singapore infants*. Ann Acad Med Singap. 2014 Sep;43(9):439-47.
3. **Aris IM**, Soh SE, Tint MT, Liang S, Chinnadurai A, Saw SM, Rajadurai VS, Kwek K, Meaney MJ, Godfrey KM, Gluckman PD, Yap FK, Chong YS, Lee YS. *Effect of maternal glycemia on neonatal adiposity in a multiethnic Asian birth cohort*. J Clin Endocrinol Metab. 2014 Jan;99(1):240-7.
4. Sukarieh R, Joseph R, Leow SC, Li Y, Loffler M, **Aris IM**, Tan JH, Teh AL, Chen L, Holbrook JD, Ng KL, Lee YS, Chong YS, Summers SA, Gluckman PD, Stunkel W. *Molecular pathways reflecting poor intrauterine growth are found in Wharton's jelly-derived mesenchymal stem cells*. Hum Reprod. 2014 Oct 10;29(10):2287-301.
5. Chen LW, Lim AL, Colega M, Tint MT, **Aris IM**, Tan CS, Chong YS, Gluckman PD, Godfrey KM, Kwek K, Saw SM, Yap F, Lee YS, Chong MF, van Dam RM. *Maternal folate status, but not that of vitamins B-12 or B-6, is associated with gestational age and preterm birth risk in a multiethnic Asian population*. J Nutr. 2015 Jan;145(1):113-20.
6. Chong MF, Chia AR, Colega M, Tint MT, **Aris IM**, Chong YS, Gluckman P, Godfrey KM, Kwek K, Saw SM, Yap F, van Dam RM, Lee YS. *Maternal Protein Intake during Pregnancy Is Not Associated with Offspring Birth Weight in a Multiethnic Asian Population*. J Nutr. 2015 Jun;145(6):1303-10.
7. Li LJ, **Aris IM**, Su LL, Tint MT, Cheung CY, Ikram MK, Gluckman P, Godfrey KM, Tan KH, Yeo G, Yap F, Kwek K, Saw SM, Chong YS, Wong TY, Lee YS. *Associations of maternal retinal vasculature with subsequent fetal growth and birth size*. PloS one. 2015;10(4):e0118250.
8. Lin X, **Aris IM**, Tint MT, Soh SE, Godfrey KM, Yeo GS, Kwek K, Chan JK, Gluckman PD, Chong YS, Yap F, Holbrook JD, Lee YS. *Ethnic Differences in Effects of Maternal Pre-Pregnancy and Pregnancy Adiposity on Offspring Size and Adiposity*. J Clin Endocrinol Metab. 2015 Oct;100(10):3641-50.
9. Quah PL, Chan YH, **Aris IM**, Pang WW, Toh JY, Tint MT, Broekman BF, Saw SM, Kwek K, Godfrey KM, Gluckman PD, Chong YS, Meaney MJ, Yap FK, van Dam RM, Lee YS, Chong MF. *Prospective associations of appetitive traits at 3 and 12 months of age with body mass index and weight gain in the first 2 years of life*. BMC Pediatr. 2015 Oct 12;15:153.
10. Zhou Y, **Aris IM**, Tan SS, Cai S, Tint MT, Krishnaswamy G, Meaney MJ, Godfrey KM, Kwek K, Gluckman PD, Chong YS, Yap F, Lek N, Gooley JJ, Lee YS. *Sleep duration and growth outcomes across the first two years of life in the GUSTO study*. Sleep Med. 2015 Oct;16(10):1281-6.

11. **Aris IM**, Soh SE, Tint MT, Saw SM, Rajadurai VS, Godfrey KM, Gluckman PD, Yap F, Chong YS, Lee YS. *Associations of gestational glycemia and prepregnancy adiposity with offspring growth and adiposity in an Asian population*. Am J Clin Nutr. 2015 Nov;102(5):1104-12.
12. Lim WY, Lee YS, Yap FK, **Aris IM**, Lek N, Meaney M, Gluckman PD, Godfrey KM, Kwek K, Chong YS, Saw SM, Pan A. *Maternal Blood Pressure During Pregnancy and Early Childhood Blood Pressures in the Offspring: The GUSTO Birth Cohort Study*. Medicine (Baltimore). 2015 Nov;94(45):e1981.
13. Tint MT, Ward LC, Soh SE, **Aris IM**, Chinnadurai A, Saw SM, Gluckman PD, Godfrey KM, Chong YS, Kramer MS, Yap F, Lingwood B, Lee YS. *Estimation of fat-free mass in Asian neonates using bioelectrical impedance analysis*. Br J Nutr. 2016 Mar 28;115(6):1033-42.
14. Pang WW, **Aris IM**, Fok D, Soh SE, Chua MC, Lim SB, Saw SM, Kwek K, Gluckman PD, Godfrey KM, van Dam RM, Kramer MS, Chong YS. *Determinants of Breastfeeding Practices and Success in a Multi-Ethnic Asian Population*. Birth. 2016 Mar;43(1):68-77.
15. Tint MT, Fortier MV, Godfrey KM, Shuter B, Kapur J, Rajadurai VS, Agarwal P, Chinnadurai A, Niduvaje K, Chan YH, **Aris IM**, Soh SE, Yap F, Saw SM, Kramer MS, Gluckman PD, Chong YS, Lee YS. *Abdominal adipose tissue compartments vary with ethnicity in Asian neonates: Growing Up in Singapore Toward Healthy Outcomes birth cohort study*. Am J Clin Nutr. 2016 May;103(5):1311-7.
16. Lim GH, Toh JY, **Aris IM**, Chia AR, Han WM, Saw SM, Godfrey KM, Gluckman PD, Chong YS, Yap F, Lee YS, Kramer MS, Chong MF. *Dietary Pattern Trajectories from 6 to 12 Months of Age in a Multi-Ethnic Asian Cohort*. Nutrients. 2016 Jun 15;8(6).
17. van Lee L, Tint MT, **Aris IM**, Quah PL, Fortier MV, Lee YS, Yap FK, Saw SM, Godfrey KM, Gluckman PD, Chong YS, Kramer MS, Chong MF. *Prospective associations of maternal betaine status with offspring weight and body composition at birth: the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study*. Am J Clin Nutr. 2016 Nov;104(5):1327-33.
18. Ong YL, Quah PL, Tint MT, **Aris IM**, Chen LW, van Dam RM, Heppe D, Saw SM, Godfrey KM, Gluckman PD, Chong YS, Yap F, Lee YS, Foong-Fong Chong M. *The association of maternal vitamin D status with infant birth outcomes, postnatal growth and adiposity in the first 2 years of life in a multi-ethnic Asian population: the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study*. Br J Nutr. 2016 Aug;116(4):621-31.
19. Chen LW, Tint MT, Fortier MV, **Aris IM**, Bernard JY, Colega M, Gluckman PD, Saw SM, Chong YS, Yap F, Godfrey KM, Kramer MS, van Dam RM, Chong MF, Lee YS. *Maternal Macronutrient Intake during Pregnancy Is Associated with Neonatal Abdominal Adiposity: The Growing Up in Singapore Towards healthy Outcomes (GUSTO) Study*. J Nutr. 2016 Aug;146(8):1571-9.
20. Fok D, **Aris IM**, Ho J, Lim SB, Chua MC, Pang WW, Saw SM, Kwek K, Godfrey KM, Kramer MS, Chong YS. *A Comparison of Practices During the Confinement Period among Chinese, Malay, and Indian Mothers in Singapore*. Birth. 2016 Sep;43(3):247-54.
21. Chong SC, Broekman BF, Qiu A, **Aris IM**, Chan YH, Rifkin-Graboi A, Law E, Chee CY, Chong YS, Kwek KY, Saw SM, Gluckman PD, Meaney MJ, Chen H. *ANXIETY AND DEPRESSION DURING PREGNANCY AND TEMPERAMENT IN EARLY INFANCY: FINDINGS FROM A MULTI-ETHNIC, ASIAN, PROSPECTIVE BIRTH COHORT STUDY*. Infant Ment Health J. 2016 Sep;37(5):584-98.
22. Chia AR, de Seymour JV, Colega M, Chen LW, Chan YH, **Aris IM**, Tint MT, Quah PL, Godfrey KM, Yap F, Saw SM, Baker PN, Chong YS, van Dam RM, Lee YS, Chong MF. *A vegetable, fruit, and white rice dietary pattern during pregnancy is associated with a lower risk of preterm birth and larger birth size in a multiethnic Asian cohort: the Growing Up in Singapore Towards healthy Outcomes (GUSTO) cohort study*. Am J Clin Nutr. 2016 Nov;104(5):1416-23.
23. **Aris IM**, Tint MT, Teh AL, Holbrook JD, Quah PL, Chong MF, Lin X, Soh SE, Saw SM, Kwek K, Godfrey KM, Gluckman PD, Chong YS, Lek N, Yap F, Lee YS. *MC3R gene polymorphisms are associated with early childhood adiposity gain and infant appetite in an Asian population*. Pediatr Obes. 2016 Dec;11(6):450-8.
24. Chen LW, **Aris IM**, Bernard JY, Tint MT, Chia A, Colega M, Gluckman PD, Shek LP, Saw SM, Chong YS, Yap F, Godfrey KM, van Dam RM, Chong MF, Lee YS. *Associations of Maternal Dietary Patterns during Pregnancy with Offspring Adiposity from Birth Until 54 Months of Age*. Nutrients. 2016 Dec 22;9(1).
25. Kramer MS, Zhang X, **Aris IM**, Dahhou M, Naimi A, Yang S, Martin RM, Oken E, Platt RW. *Methodological challenges in studying the causal determinants of child growth*. Int J Epidemiol. 2016 Dec 1;45(6):2030-7.

26. **Aris IM**, Soh SE, Tint MT, Saw SM, Rajadurai VS, Godfrey KM, Gluckman PD, Yap F, Chong YS, Lee YS. *Associations of infant milk feed type on early postnatal growth of offspring exposed and unexposed to gestational diabetes in utero*. Eur J Nutr. 2017 Feb;56(1):55-64.
27. Chen LW, **Aris IM**, Bernard JY, Tint MT, Colega M, Gluckman PD, Tan KH, Shek LP, Chong YS, Yap F, Godfrey KM, van Dam RM, Chong MF, Lee YS. *Associations of maternal macronutrient intake during pregnancy with infant BMI peak characteristics and childhood BMI*. Am J Clin Nutr. 2017 Mar;105(3):705-13.
28. Lin X, Lim IY, Wu Y, Teh AL, Chen L, **Aris IM**, Soh SE, Tint MT, Maclsaac JL, Morin AM, Yap F, Tan KH, Saw SM, Kobor MS, Meaney MJ, Godfrey KM, Chong YS, Holbrook JD, Lee YS, Gluckman PD, Karnani N. *Developmental pathways to adiposity begin before birth and are influenced by genotype, prenatal environment and epigenome*. BMC Med. 2017 Mar 7;15(1):50.
29. **Aris IM**, Bernard JY, Chen LW, Tint MT, Pang WW, Lim WY, Soh SE, Saw SM, Godfrey KM, Gluckman PD, Chong YS, Yap F, Kramer MS, Lee YS. *Infant body mass index peak and early childhood cardio-metabolic risk markers in a multi-ethnic Asian birth cohort*. Int J Epidemiol. 2017 Apr 1;46(2):513-25.
30. Bernard JY, Tint MT, **Aris IM**, Chen LW, Quah PL, Tan KH, Yeo GS, Fortier MV, Yap F, Shek L, Chong YS, Gluckman PD, Godfrey KM, Calder PC, Chong MFF, Kramer MS, Botton J, Lee YS. *Maternal plasma phosphatidylcholine polyunsaturated fatty acids during pregnancy and offspring growth and adiposity*. Prostaglandins Leukot Essent Fatty Acids. 2017 Jun;121:21-9.
31. Loo EX, Goh A, **Aris IM**, Teoh OH, Shek LP, Lee BW, Chan YH, Tint MT, Soh SE, Saw SM, Gluckman P, Godfrey KM, Chong YS, Yap F, Kramer MS, Van Bever H, Lee YS. *Effects of infant weight gain on subsequent allergic outcomes in the first 3 years of life*. BMC Pediatr. 2017 Jun 2;17(1):134.
32. Loy SL, Wee PH, Colega MT, Cheung YB, **Aris IM**, Chan JKY, Godfrey KM, Gluckman PD, Tan KH, Shek LP, Chong YS, Natarajan P, Muller-Riemenschneider F, Lek N, Rajadurai VS, Tint MT, Lee YS, Chong MF, Yap F. *Maternal Night-Fasting Interval during Pregnancy Is Directly Associated with Neonatal Head Circumference and Adiposity in Girls but Not Boys*. J Nutr. 2017 Jul;147(7):1384-91.
33. **Aris IM**, Bernard JY, Chen LW, Tint MT, Lim WY, Soh SE, Saw SM, Shek LP, Godfrey KM, Gluckman PD, Chong YS, Yap F, Kramer MS, Lee YS. *Postnatal height and adiposity gain, childhood blood pressure and prehypertension risk in an Asian birth cohort*. Int J Obes (Lond). 2017 Jul;41(7):1011-7.
34. **Aris IM**, Chen LW, Tint MT, Pang WW, Soh SE, Saw SM, Shek LP, Tan KH, Gluckman PD, Chong YS, Yap F, Godfrey KM, Kramer MS, Lee YS. *Body mass index trajectories in the first two years and subsequent childhood cardio-metabolic outcomes: a prospective multi-ethnic Asian cohort study*. Sci Rep. 2017 Aug 21;7(1):8424.
35. **Aris IM**, Logan S, Lim C, Choolani M, Biswas A, Bhattacharya S. *Preterm prelabour rupture of membranes: a retrospective cohort study of association with adverse outcome in subsequent pregnancy*. BJOG. 2017 Oct;124(11):1698-707.
36. Li LJ, Tan KH, **Aris IM**, Chong YS, Saw SM, Gluckman P, Wang JJ, Wong TY. *Gestational retinal microvasculature and the risk of 5 year postpartum abnormal glucose metabolism*. Diabetologia. 2017 Dec;60(12):2368-76.
37. Chia AR, Tint MT, Han CY, Chen LW, Colega M, **Aris IM**, Chua MC, Tan KH, Yap F, Shek LP, Chong YS, Godfrey KM, Fortier MV, Lee YS, Chong MF. *Adherence to a healthy eating index for pregnant women is associated with lower neonatal adiposity in a multiethnic Asian cohort: the Growing Up in Singapore Towards healthy Outcomes (GUSTO) Study*. Am J Clin Nutr. 2018 Jan 1;107(1):71-9.
38. **Aris IM**, Bernard JY, Chen LW, Tint MT, Pang WW, Soh SE, Saw SM, Shek LP, Godfrey KM, Gluckman PD, Chong YS, Yap F, Kramer MS, Lee YS. *Modifiable risk factors in the first 1000 days for subsequent risk of childhood overweight in an Asian cohort: significance of parental overweight status*. Int J Obes (Lond). 2018 Jan;42(1):44-51.
39. Chen LW, Tint MT, Fortier MV, **Aris IM**, Shek LP, Tan KH, Chan SY, Gluckman PD, Chong YS, Godfrey KM, Rajadurai VS, Yap F, Kramer MS, Lee YS. *Which anthropometric measures best reflect neonatal adiposity?* Int J Obes (Lond). 2018 Mar;42(3):501-6.
40. Li LJ, **Aris IM**, Su LL, Chong YS, Wong TY, Tan KH, Wang JJ. *Effect of gestational diabetes and hypertensive disorders of pregnancy on postpartum cardiometabolic risk*. Endocr Connect. 2018 Mar;7(3):433-42.
41. Tng HY, Thu WPP, Logan S, **Aris IM**, Cauley J, Yong EL. *Sleep apnea and femoral neck BMD among Singaporean mid-life women*. Arch Osteoporos. 2018 Mar 5;13(1):19.

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Thesis

Determinants of Growth and Body Composition in Singaporean Children. Izzuddin M Aris
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Abstracts, Poster Presentations and Exhibits Presented at Professional Meetings

- 2019 Title: Association of Weight for Length vs Body Mass Index During the First 2 Years of Life with Cardiometabolic Risk in Early Adolescence (Poster presentation)
Location: National Institutes of Health Body Composition Workshop 2019, Bethesda, MD, USA
- 2019 Title: Parental obesity and offspring puberty: findings from Project Viva (Poster presentation)
Location: 11th DOHaD World Congress, Melbourne, Australia
- 2020 Title: Prospective Associations of Neighborhood Child Opportunity Index with Adolescent Cardiometabolic Risk (Oral presentation).
Location: Society for Epidemiologic Research Annual Meeting 2020, Boston, MA
- 2020 Title: Associations of Childhood Patterns of Overweight and Wheeze with Onsets of Asthma and Obesity in Adolescence (Oral poster presentation).
Location: Society for Pediatric and Perinatal Epidemiologic Research Annual Meeting 2020, Boston, MA
- 2021 Title: Prospective Associations of Mode of Delivery with Offspring Pubertal Development (Oral poster presentation)
Location: Society for Epidemiologic Research Annual Meeting 2021, San Diego, CA
- 2021 Title: Association of Early Antibiotic Exposure with Childhood Body Mass Index Trajectory Milestones (Speed Talk session)
Location: Society for Pediatric and Perinatal Epidemiologic Research Annual Meeting 2021, San Diego, CA
- 2021 Title: Association of early life growth with offspring pubertal development: a nationwide US multi-cohort study (Oral presentation).
Location: US Developmental Origins of Health and Disease Congress 2021, Raleigh, NC
- 2022 Title: Neighborhood Opportunity and Vulnerability, and Trajectories of Child Body Mass Index and Obesity: A Nationwide US Multicohort Study (Oral presentation)
Location: US Developmental Origins of Health and Disease Congress 2022, Minneapolis, MN

Narrative Report

I am an epidemiologist and Assistant Professor in the Department of Population Medicine at Harvard Medical School and Harvard Pilgrim Health Care Institute. I earned my BSc in Biomedical Sciences with 2nd upper class honors in 2010, and PhD in Epidemiology in 2015, both from the National University of Singapore. As a doctoral student, I was awarded a university-sponsored scholarship to conduct my research examining the early-life determinants of childhood growth and body composition using data from a prospective birth cohort in Singapore. Upon graduating in 2015, I served as a postdoctoral fellow at the Singapore Institute for Clinical Sciences, where I continued my work in quantifying the relationships of pre-, peri- and postnatal risk factors with important childhood health outcomes. In 2017, I received a highly competitive university-sponsored fellowship from Singapore to support my advanced postdoctoral training at the Department of Population Medicine, Harvard Medical School and Harvard Pilgrim Health Care Institute.

My research focuses on the paradigm of the developmental origins of health and disease (DOHaD), with an overall goal of quantifying the extent to which early life risk factors at critical developmental periods during the lifecourse affect important health outcomes. A major focus of my research pertains to identifying pre-, peri- and postnatal predictors of childhood growth, obesity, and obesity-related conditions such as cardiometabolic disease and accelerated pubertal development. I have made several contributions to the field including authoring over 130 peer-reviewed publications in notable journals, of which 25 have a Relative Citation Ratio above the 75th percentile on the NIH icite index. I have also received several awards for my work from national and international societies, including the inaugural Young Investigator Award by the Nestlé Nutrition Institute, the Outstanding Manuscript Award by the Nutrition Obesity Research Center at Harvard, the US DOHaD Scientific Award by the US DOHaD Society, and Rising Star Awards by the Australian and New Zealand Obesity Society and the Society for Pediatric and Perinatal Epidemiology.

I have established methodological expertise in longitudinal modelling of trajectories of growth and other health outcomes using various statistical techniques such as linear spline and natural cubic spline models, latent class growth mixture models and shape-invariant growth curve models. Using these techniques, I have characterized distinct growth trajectory milestones of infancy BMI peak, childhood BMI rebound, and age at peak height velocity, identified several early-life factors (such as maternal glycemia, breastfeeding initiation and duration, parental obesity, and socioeconomic status) affecting these developmental milestones, and identified adverse cardiometabolic profiles in children related to these trajectory milestones and patterns. I am also recognized by Expertscape as an expert in obesity i.e., ranked in the top 0.1% of 310,000+ published authors worldwide. My expertise on the topics of growth modelling and child obesity have subsequently led to editorial pieces in acclaimed journals such as the American Journal of Clinical Nutrition and JAMA Pediatrics.

I am also currently serving as the faculty instructor and Co-Director for the Clinical Epidemiology and Population Health course, which is a core component of the Harvard Medical School Pathways curriculum. In this role, I collaborate with other course instructors to lead and prepare the course syllabus and assignments, and teach core skills of clinical epidemiology (biostatistics, study design, and critical reasoning) to medical and dental students, to which I have received enthusiastic and positive feedback for my teaching, as tracked through Harvard's online evaluations. I also serve as a guest lecturer at Harvard School of Public Health on the topic of obesity epidemiology. I have mentored PhD students, post-doctoral and clinical fellows, and taught several of my peers, often with great success. I will continue to serve in these teaching roles in the future. In recognition of my efforts in providing mentoring to others, I have been awarded the 2022 Young Mentor Award by Harvard Medical School.